DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027358
Date Inspected: 21-Mar-2012

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1730
Location: Job Site

CWI Name: Bernie Docena and Fred Von Hoff

CWI Present:	☑ Yes	☐ No					
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: SAS Tower

Summary of Items Observed:

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At Tower Base 13 meters diaphragm, weld joint number W128, QA randomly observed ABF certified welder James Zhen ID #6001 continuing to perform 1G (flat position) Submerged Arc Welding (SAW) on the Partial Joint Penetration (PJP) T- joint between the 45mm thick inner North diaphragm and 60mm tower skin plate. The welder was utilizing F7A6-EM12K-H8, 3.2mm electrode with corresponding Esab OK Flux 10.62 flux and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-4062-1. The joint being welded has a 45 degree bevel groove T- joint. The plates were preheated to more than 225 °F using Miller Proheat 35 Induction Heating System with one heater blanket located on top of each plate prior welding and moving it to the side and lifting the other during welding. ABF/QC Fred Von Hoff was noted monitoring the welding parameters of the welder with measured working current of 550 amperes, 32.5 volts with travel speed of 393 mm per minute and calculated heat input of 2.7 Kjoules/mm. QA noted the welding parameters, the workmanship and appearance of the completed fill satisfactory. During the shift while the SAW fill pass welding was still in progress, fellow QA Danny Reyes took over the observations on the production welding.

At Tower Base 9 meter South external diaphragm, this QA Inspector randomly observed ABF personnel Luo Xiao Hua perform 4F (overhead position) fillet production welding on the C10 channel to 45mm thick diaphragm plate fillet weld joint W100-3. The welder was noted welding 6mm fillet between one side of the channel top flange and diaphragm plate per detail 1 of the ZPMC drawing number FW3. The welder was using the 1/8” diameter

E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. This QA Inspector observed ABF personnel using propylene gas torch to preheat the plates being welded prior welding. This QA Inspector observed QC Inspector Bernie Docena using a Fluke infra red temperature gauge to verify the preheat temperature of more than 150°F. This QA Inspector performed a verification of the welding parameters and observed 135 amperes on the 1/8" diameter electrode. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-F1200A. At the end of the shift, the welder has not completed the 6mm fillet weld on south outer diaphragm and should remain tomorrow.

At Tower Base 9 meter South external diaphragm, this QA Inspector randomly observed ABF personnel Xiao Jian Wan perform 4F (overhead position) fillet production welding on the C10 channel to 45mm thick diaphragm plate fillet weld joint W100-4. The welder was noted welding 6mm fillet between one side of the channel top flange and diaphragm plate per detail 1 of the ZPMC drawing number FW3. The welder was using the 1/8" diameter E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. This QA Inspector observed ABF personnel using propylene gas torch to preheat the plates being welded prior welding. This QA Inspector observed QC Inspector Bernie Docena using a Fluke infra red temperature gauge to verify the preheat temperature of more than 150°F. This QA Inspector performed a verification of the welding parameters and observed 135 amperes on the 1/8" diameter electrode. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-F1200A. At the end of the shift, the welder has not completed the 6mm fillet weld on south outer diaphragm and should remain tomorrow.

At Tower Base 9 meter outer East external diaphragm below the drop in plate WD1-A46, this QA Inspector randomly observed ABF personnel Jin Pei Wang perform 4F (overhead) fillet welding the 45mm thick stiffener plate to 80mm thick shear plate on one side, 45mm thick tower shaft 'S' skin plate 'B' on another side and 65mm thick vertical stiffener on the third side. There are no weld joint designations for these fillet weld joints since ABF QC has not come up with their weld map yet. The welder was noted fillet welding the stiffener plate using Shielded Metal Arc Welding (SMAW) with 5/32" diameter E7018H4R electrode implementing Caltrans approved WPS ABF-WPS-D15-F1200A. This QA Inspector observed ABF personnel using Miller Proheat 35 Induction Heating System to preheat the plates being welded prior to, during and after welding. This QA Inspector observed QC Inspector Bernie Docena using a Fluke infra red temperature gauge to verify the preheat temperature of more than 325°F. This QA Inspector performed a verification of the welding parameters and observed 145 amperes on the 5/32" diameter E7018 electrode. At the end of the shift, 4F fillet welding was still continuing and should remain tomorrow. The welder performed the post weld heat treatment (PWHT) after welding using the same preheat temperature and heating machine and held it for three hours as required.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the Partial Joint Penetration (PJP) welding of twelve (12) PJP T-joints and eight (8) PJP butt joints. The QA verification was performed to verify that the welding and the VT/MT inspection performed by the QC inspector at 9 meter center external diaphragm meet the requirements of the contract documents. At the conclusion of the QA verification it appeared that the weld and the QC inspection complied with the contract documents.

1. W033 to W036 PJP T-joint – weld cover QA verified
2. W073-1 to W073-8 PJP T-joints – weld cover QA verified
3. W074-1 to W074-8 PJP butt joints – weld cover QA verified

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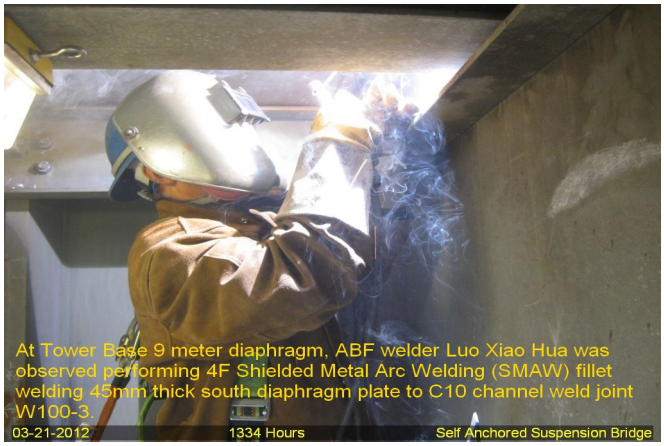

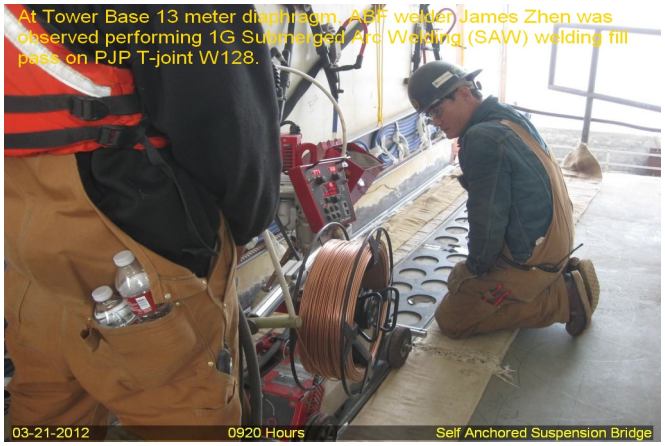

Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer